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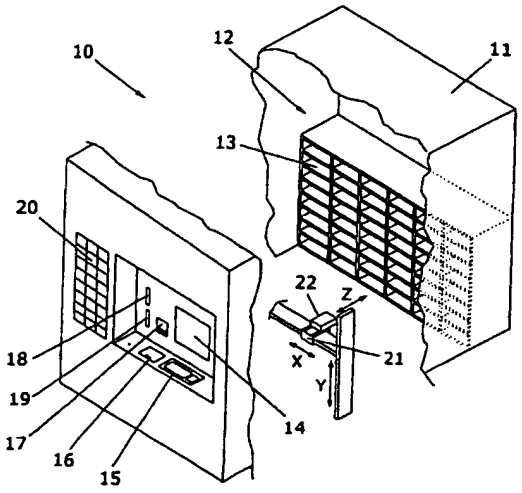
(54) Title: AUTOMATIC MACHINE FOR DISPENSING PHOTOGRAPHIC ITEMS AND THE LIKE



(57) Abstract: An automatic machine (10) for dispensing photographic products and the like comprises a container (11) inside which there is at least a magazine constituted by one or more hive-shaped containers (12), each of said hive-shaped containers comprising a plurality of seats (13), a system for moving and handling (21, 22) the products which are housed within said seats (13) controlled by an electronic control logics, a data inputting (15) and displaying (14) device placed on the front part of said container, a device (17) for delivering outwards the products which have been withdrawn form said seats (13), as well as a cashing device (18). Said machine further comprises a device (16) for collecting at least a roll of film to be developed, as well as a device (17) suitable for delivering a coded carrier to the user, in particular a magnetic or microchip card or a card provided of bar codes, whereby a code to be associated to the roll to be introduced within said dispensing machine (10) is bound to said carrier.

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AUTOMATIC MACHINE FOR DISPENSING PHOTOGRAPHIC ITEMS AND THE LIKE

* * * * *

The present invention relates to an automatic dispenser of photographic items and the like.

More particularly, the present invention relates to an automatic dispensing machine provided with means suitable for receiving from an user one or more rolls of film to be developed and printed, as well as with means for delivering the developed photographs, and with possible means for delivering to the user different kinds of photographic material, following to a payment that may be carried out in different ways.

The invention finds its main application in the field of manufacturing automatic dispensing machines.

BACKGROUND ART

Different types of automatic machines for dispensing articles of any kind are known in the art.

These machines are operated by means of tokens, banknotes, credit od debit cards, magnetic or electronic cards, etc.

These automatic dispensing machines, which can either be installed inside a room, or outside, are generally constituted by a metallic container inside of which there is a fixed or movable store having a plurality of seats or cavities, each housing a given article.

Each seat or cavity may normally be accessed to by opening suitable doors which are located on the front

part of said container.

The payment of a given amount (as mentioned, through coins, tokens, banknotes, electronic or magnetic cards etc.) allows an user to access to a given seat and to the article contained therein.

The articles contained within said automatic dispensing machines can be of the most different type, e.g. cigarettes, flowers, foodstuffs, drinks, videocassettes, audio or video records, sanitary items etc.

By way of example, european patent application No. EP-A-577121 describes an automatic device for dispensing audiovisual and digital record carriers.

Said device comprises a fixed magazine comprising a plurality of adjacent seats placed on respective rows and columns, each seat being suitable for housing a record carrier, at least an article handling unit for externally loading and unloading said articles through a slot, a device for reading an identifying label associated to each carrier, a device by means of which an user can select a given carrier, as well as an automatic payment means that, once activated, allows a carrier to be withdrawn from the device.

Said handling unit comprises a pair of carriages which are parallel to each other and movable along vertical guides, as well as a slider that is movable along a second horizontal guide connected to said carriages; a blocking element for handling the carriers is rigidly fixed to said slider.

Said blocking element comprises movable jaws and a device for automatically modifying the distance between

the jaws along a further guide.

The opening and closing operation of the doors, thus the access to the seats containing the carriers, is controlled by a suitable computer, that is on its turn connected to a device for identifying the user (i.e. through a magnetic card) and for carrying out the payment (i.e. through banknotes or credit card).

Other automatic machines with advance payment functions known in the art include a camera and a device for automatically developing and printing the photos snapped by said camera.

Following to the payment of a given amount, the user is photographed and, after some minutes, he/she receives from the machine one or more prints of the snapped photo.

The applicant is not aware of automatic dispensing machines which were able to withdraw from an user a roll of photos to be developed and deliver to said user, after a given priod of time, printed photos according to sizes and number of copies which are selected by the user.

DESCRIPTION OF THE INVENTION

The present invention aims to provide a new kind of automatic dispensing machine that allows an user to directly deliver a roll of film to be developed and to successively withdraw printed photos in a size and in a number of copies that is determined by said user.

This is achieved by means of an automatic dispensing machine having the features disclosed in the main claim.

The dependent claims outline particularly advantageous forms of embodiment of the dispensing machine according to the invention.

The automatic dispensing machine according to the

present invention comprises a container housing a series of seats which are suitable for receiving rolls of film to be developed, as well as at least a door, that is placed on the front part of the dispensing machine, through which an user can introduce one or more rolls to be developed and printed in the machine.

According to the invention, the dispensing machine comprises means suitable for univocally identifying the roll or rolls inserted in the machine by the user, means for associating said roll or rolls to one or more of said seats, as well as means for displacing said roll or rolls towards its/their associated seat or seats.

Furthermore, the dispensing machine comprises data computing, storing and displaying means allowing a skilled operator who withdraws the rolls from predetermined seats, to reintroduce the printed photos within the same seats in order to allow the user who had required the developing and printing service to successively withdraw the photos.

According to a particularly advantageous form of embodiment of the invention, the automatic dispensing machine comprises a suitable control software, a data inputting keyboard and a suitable display by means of which the user can input a series of possibly pre-selected requests, such as for instance the number of copies to be printed and/or their size.

Furthermore, the dispensing machine can be provided with means both for issuing a card including the user's identifying data, and for reading said card if it is already available.

According to a further advantageous form of

embodiment of the invention, the automatic dispensing machine comprises a magazine housing a series of items which can be selected by the user, as well as means for dispensing said items to the user after a given amount has been paid; for example, said items can be constituted by various material such as new rolls of film, audio or video cassettes, batteries, disposable cameras, etc.

The latter form of embodiment appears to be extremely advantageous from the point of view of the user's convenience, since the machine can in practice dispense all the services of a photograph's shop at any time, in particular beyond the normal shop closing time.

This kind of dispensing machine can be installed anywhere, thereby allowing a series of selling points to be created and widening the selling network of a given commercial business.

ILLUSTRATION OF DRAWINGS

Other features and advantages of the invention will become apparent by reading the following description of a form of embodiment of the invention, given as a non-limiting example, with the help of the drawings illustrated in the attached sheets, in which:

- fig. 1 shows a schematical perspective exploded view of a dispensing machine according to the invention;
- fig. 2 is a flow-sheet showing the general operation of a dispensing machine according to the invention;
- fig. 3 is a flow-sheet showing the operation mode "roll acceptance" of the dispensing machine according to the invention;
- fig. 4 is a flow-sheet showing the operation mode "delivering of photos" of the dispensing machine

according to the invention;

- fig. 5 is a flow-sheet showing the operation mode "selling of items" of the dispensing machine according to the invention.

DESCRIPTION OF A FORM OF EMBODIMENT

In figure 1, reference sign 10 generally indicates a machine for automatically dispensing photographic products and the like according to the present invention.

Said machine 10 has a structural shape that is similar to the one of a *per se* known dispenser for renting videocassettes.

Thus, the dispensing machine according to the present invention comprises a metallic container 11, whose rear part is provided with a series of modular hive-shaped containers 12, whereby each container 12 includes a series of seats 13; each seat is suitable for housing an item whose overall dimensions are compatible with those of the seat.

According to the present invention, said modular hive-shaped containers 12 form a magazine for storing developed photos.

Inside of each seat 13 the operator, in this case the person who manages the dispensing machine, inserts a suitable box containing the photos which have been printed starting from a roll of film introduced into the dispensing machine by the user according to the operating way that will later be described in detail.

In this context, it has to be stressed that spatial position of each seat of the hive-shaped containers is coded inside a suitable software that controls the operation of dispensing machine 10.

In the front part, dispensing machine 10 is provided with a suitable displaying device, e.g. a monitor 14, as well as with a keyboard 15 through which the user can input different data.

According to an alternative form of embodiment, monitor 14 is constituted by a so-called "touch-screen" monitor that allows a data input by the user through touching predetermined portions of said monitor; in this case keyboard 15 can be eliminated.

Yet, the front part of dispensing machine 10 comprises a door 16 that can be opened by means of the electronic control logics of the dispensing machine; the opening operation of door 16 (that is designed in order to prevent any accident), gives access to a chute (not illustrated in the figure) through which the user can introduce one or more rolls of film to be developed into container 11.

Furthermore, the front part of container is provided with a second door 17 (that is designed in order to prevent any accident too) that can be opened by means of the electronic control logics of the dispensing machine; the opening operation of said second door 17 allows the user to withdraw a box (not illustrated in the figure) inside of which there are the printed photos.

Yet, the front part of the container is provided with a cashing device 18 which, depending on circumstances, may be constituted by a device for accepting coins and/or banknotes, or by a credit card reader; alternatively, a device for identifying the user can be constituted by a biometric sensor that associates, for instance, a given user to his fingerprint.

Furthermore, said device can be provided witha chute (not illustrated in the drawing) for the possible delivering of change money to the user, where the latter has paid a higher amount than the due one.

Cashing devices 18 of this kind are well known to the skilled technicians, and they do not require any further description.

According to the invention, dispensing machine 10 further comprises a device 19, whose outlet is placed on the front part of container 11, for issuing a card provided with an identifying code that can electronically be read by the control logics of dispensing machine 10.

Said card, that can physically be constituted by a magnetic card, a microchip card, or provided with a bar code etc., is associated to a series of adhesive labels having a numeric code that is univocally associated to said card.

Once an adhesive label is affixed to the roll of film to be developed, the latter is then univocally associated to the card that is kept by the user for successively withdrawing the printed photos.

According to an advantageous form of embodiment of the invention device 19 is suitable for expelling a box that bears said identifyng codes and that contains said card.

In this case, the user opens the box, withdraws the card, introduces the roll of film to be developed inside of said box and finally places said box on the chute behind door 16.

According to the invention, a suitable reader (not illustrated) verifies and validates then the introduction

of the roll by means of the user.

According to a form of embodiment of the invention, front part of container 11 further comprises a conventional dispensing device 20, e.g. a system for delivering a series of objects placed on a rack, in order to sell some further accessories (for example new rolls of film, batteries, disposable cameras, etc.).T

The access to selling device 20 is always controlled by monitor 14, keyboard 15 and cashing device 17.

Inside container 11 there is a system for withdrawing the photographs which are present within seats 13 of hives 12.

This system, that is connected to the eletronic control logics of dispensing machine 10, comprises a carriage 21 movable along two perpendicular axes; said carriage supports a handling device 22 that is movable along a third axis Z which is perpendicular to X, Y axes.

Through this system, handling device 22 withdraws a given box placed inside a seat 13, and delivers it to the user in correspondence of door 17.

The overall operation of dispensing machine 10 according to the present invention is shown in the flowsheets of figures 2 to 4 and can be described as follows.

The user who has to deliver on or more rolls of films to be developed introduces into the dispensing machine a minimum starting amount(i.e. 500 or 1000 italian Lire, approx. EUR 0,25 to 0,50) and obtains from the machine a card provided with several adhesive labels (or, according to another form of embdiment, a box that is already coded for introducing the rolls therein and

that contains the card for withdrawing the printed photos; the machine unlocks then door 16 and the gives access to the chute for inserting the roll.

The acceptance of the roll by dispensing machine 10 causes a signal to be issued by the electronic control logics of the dispensing machine.

Said signal is transmitted, through suitable means, (e.g. through a local area network or a modem) to a personal computer that is owned by the dispensing machine manager, who withdraws then the roll to be developed.

Once the development has been carried out and the photographs have been printed, the manager places the photos inside a suitable box and places the latter within a given seat 13 of the dispensing machine.

By means of his personal computer, the manager informs the control logics of the dispensing machine about the spatial position of the container which, on its turn, bears the code associated to the user's card.

When the user wishes to withdraw his printed photographs, he will introduce his card within the dispensing machine and (see in particular fig. 2), if the photographs are ready, the dispensing machine displays on monitor 14 the cost of the service.

The subsequent introduction of the prompted amount causes the delivering procedure to be switched on (see fig. 4), whereby carriage 21 and handling device 22 are activated.

The latter picks up the box that is present inside of given seat 13 and places it in correspondance of door 17 that is opened in order to allow the user to withdraw the box.

If the user wishes to purchase further products which are present inside of the selling dispenser 20, the procedure illustrated in fig. 5 is switched on; therefore, the introduction of a given amount allows a given door or drawer of dispenser 20 to be opened, thereby giving access to that product.

The invention has been described with reference to a particular form of embodiment thereof.

However, it is clear that the invention includes several variants falling within its spirit and scopes, in the range of the appended claims.

By way of example, the invention has been described with reference to a form of embodiment according to which the hive-shaped containers 12 provided with seats 13 for the printed photos are fixed inside container 11, and the dispensing machine is provided of a system for moving and handling the boxes along three mutually perpendicular axes; however, according to a form of embodiment the hive-shaped containers are mounted on a rotating drum, and the handling device is only movable along Y and Z axes; in this case the movement along X axis is carried out by rotating said drum.

CLAIMS

1. Automatic machine (10) for dispensing photographic products and the like, comprising a container (11) inside which there is at least a magazine costituted by one or more hive-shaped containers (12), each of said hive-shaped containers comprising a plurality of seats (13), a system for moving and handling (21, 22) the products which are housed within said seats (13) controlled by an electronic control logics, a data inputting (15) and displaying (14) device placed on the front part of said container, a device (17) for delivering outwards the products which have been withdrawn from said seats (13), as well as a cashing device (18), characterised in that it further comprises a device (16) for collecting at least a roll of film to be developed, as well as a device (17) suitable for delivering a coded carrier to the user, in particular a magnetic or microchip card or a card provided of bar codes, whereby a code to be associated to the roll to be introduced within said dispensing machine (10) is bound to said carrier.

2. Dispensing machine (10) according to claim 1, characterised in that it further comprises a device for reading and storing data which are associated to the user, in particular a magnetic or microchip card reader, or a biometric sensor.

3. Dispensing machine (10) according to anyone of the preceding claims, characterised in that it further comprises a second dispenser (20) for selling

products, e.g. new rolls of film, disposable cameras, batteries, whose operation is controlled by the electronic control logics of said dispensing machine (10).

4. Dispensing machine (10) according to anyone of the preceding claims, characterised in that it further comprises a device for verifying and validating the roll provided with a code that is introduced within said dispensing machine (10).

5. Dispensing machine (10) according to anyone of the preceding claims, characterised in that it comprises a series of boxes suitable for containing printed photographs, each box being placed inside of a predetermined seat (13).

6. Dispensing machine (10) according to anyone of the preceding claims, characterised in that it comprises memory means for storing the spatial position and the state, either empty or full, of each seat (13), as well as means for associating the code carried by said coded carrier to a given box containing printed photographs.

7. Dispensing machine (10) according to anyone of the preceding claims, characterised in that it further comprises means for transmitting to a remote location the data relative to the rolls of film to be developed introduced within the dispensing machine.

8. Dispensing machine (10) according to anyone of the preceding claims, characterised in that it further comprises means for receiving from a remote location and for storing the data relative to the position of

the printed photographs inside of the hive-shaped containers (12), as well as to the amounts to be paid for the rendered services.

9. Dispensing machine (10) according to anyone of the preceding claims, characterised in that said magazine is fixed inside of said container (11), and in that said moving and handling system (21, 22) comprises a device that is movable along three mutually perpendicular axes (X, Y, Z).

10. Dispensing machine (10) according to anyone of claims 1 to 7, characterised in that said magazine is constituted by a drum rotating about a vertical axis, whereby the side surface of said drum is provided with said seats (13), said moving and handling device (21, 22) being movable along two (Y, Z) mutually perpendicular axes.

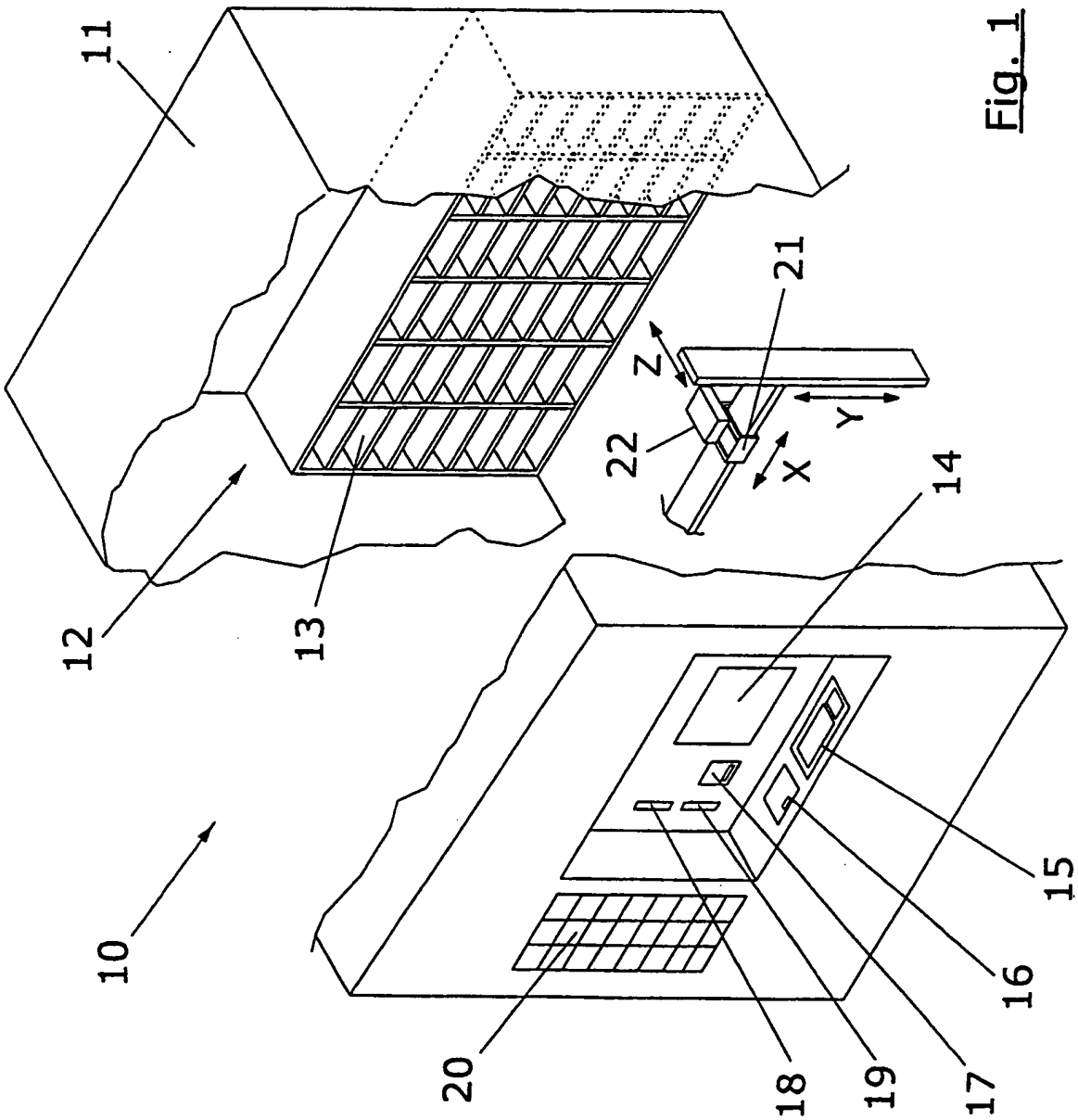

Fig. 1

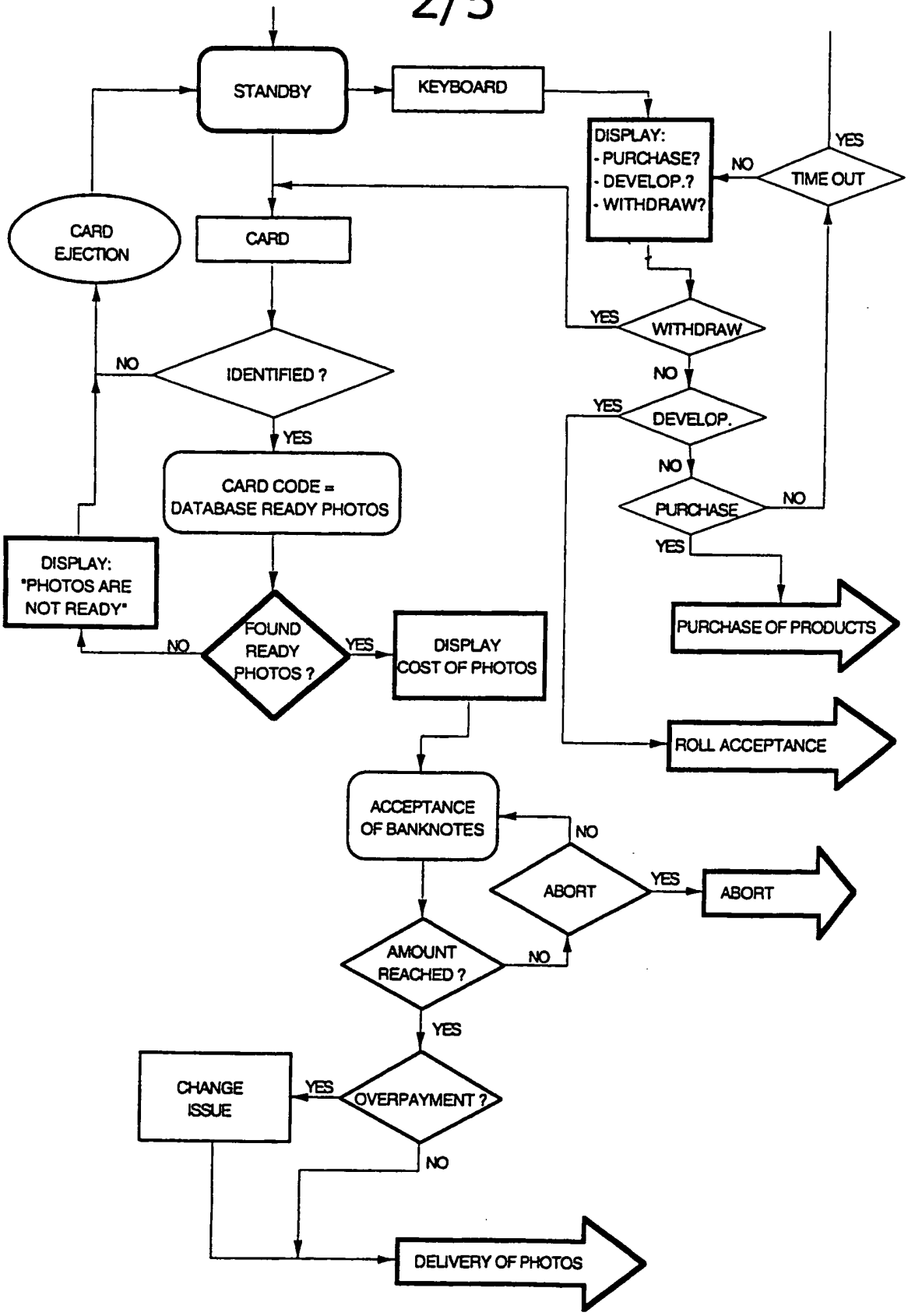
STANDBY
KEYBOARD
DISPLAY:
- PURCHASE?
- DEVELOP.?
- WITHDRAW?
NO
TIME OUT
YES
CARD EJECTION
CARD
YES
WITHDRAW
NO
IDENTIFIED ?
YES
NO
YES
DEVELOP.
NO
CARD CODE = DATABASE READY PHOTOS
PURCHASE
NO
YES
DISPLAY: "PHOTOS ARE NOT READY"
FOUND READY PHOTOS ?
NO
YES
DISPLAY COST OF PHOTOS
PURCHASE OF PRODUCTS
ROLL ACCEPTANCE
ACCEPTANCE OF BANKNOTES
NO
ABORT
YES
ABORT
AMOUNT REACHED ?
NO
YES
CHANGE ISSUE
YES
OVERPAYMENT ?
NO
DELIVERY OF PHOTOS

Fig. 2

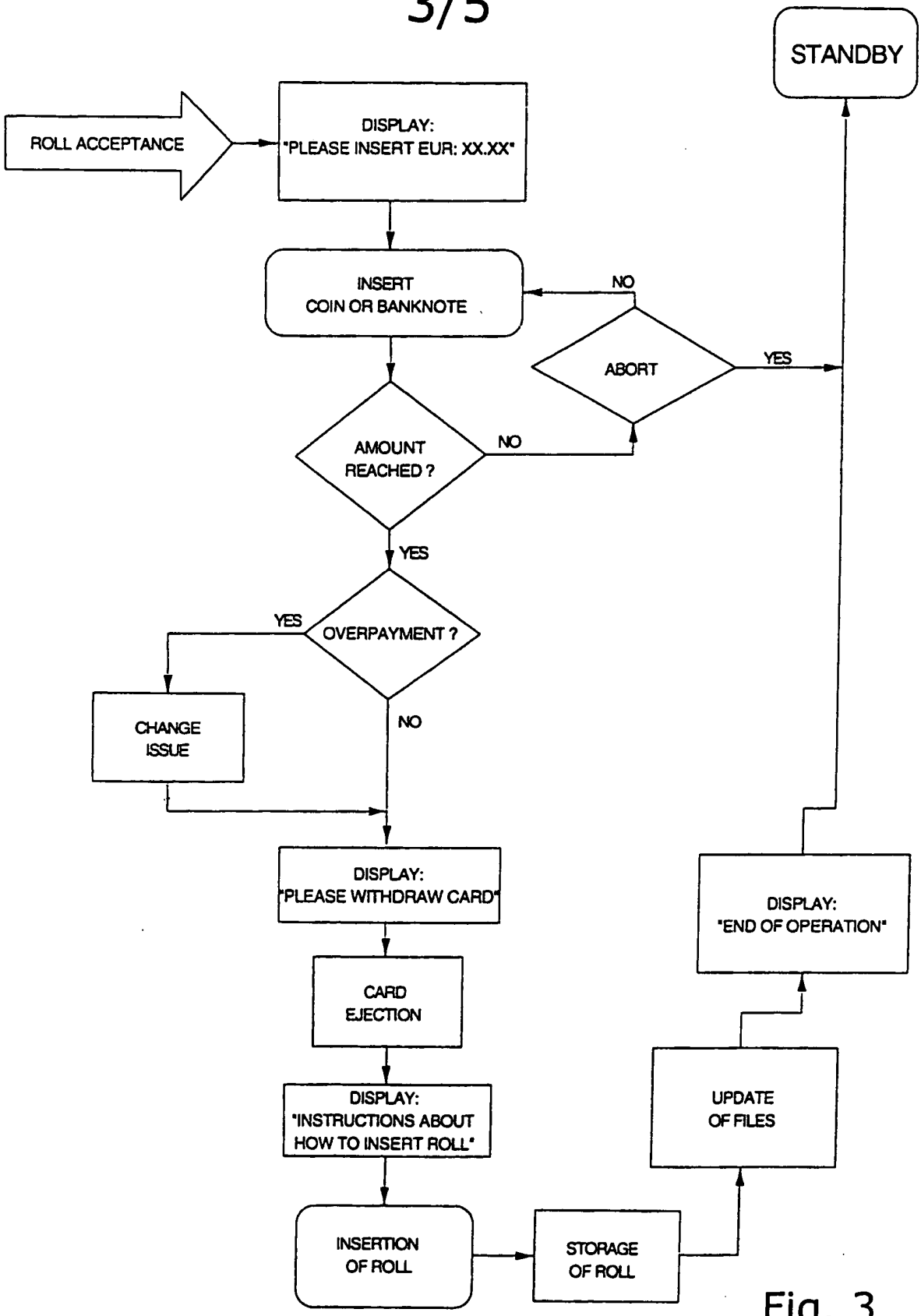
STANDBY
ROLL ACCEPTANCE
DISPLAY:
"PLEASE INSERT EUR: XX.XX"
INSERT
COIN OR BANKNOTE
NO
ABORT
YES
AMOUNT
REACHED ?
NO
YES
YES
OVERPAYMENT ?
CHANGE
ISSUE
NO
DISPLAY:
"PLEASE WITHDRAW CARD"
CARD
EJECTION
DISPLAY:
"INSTRUCTIONS ABOUT
HOW TO INSERT ROLL"
INSERTION
OF ROLL
STORAGE
OF ROLL
UPDATE
OF FILES
DISPLAY:
"END OF OPERATION"

Fig. 3

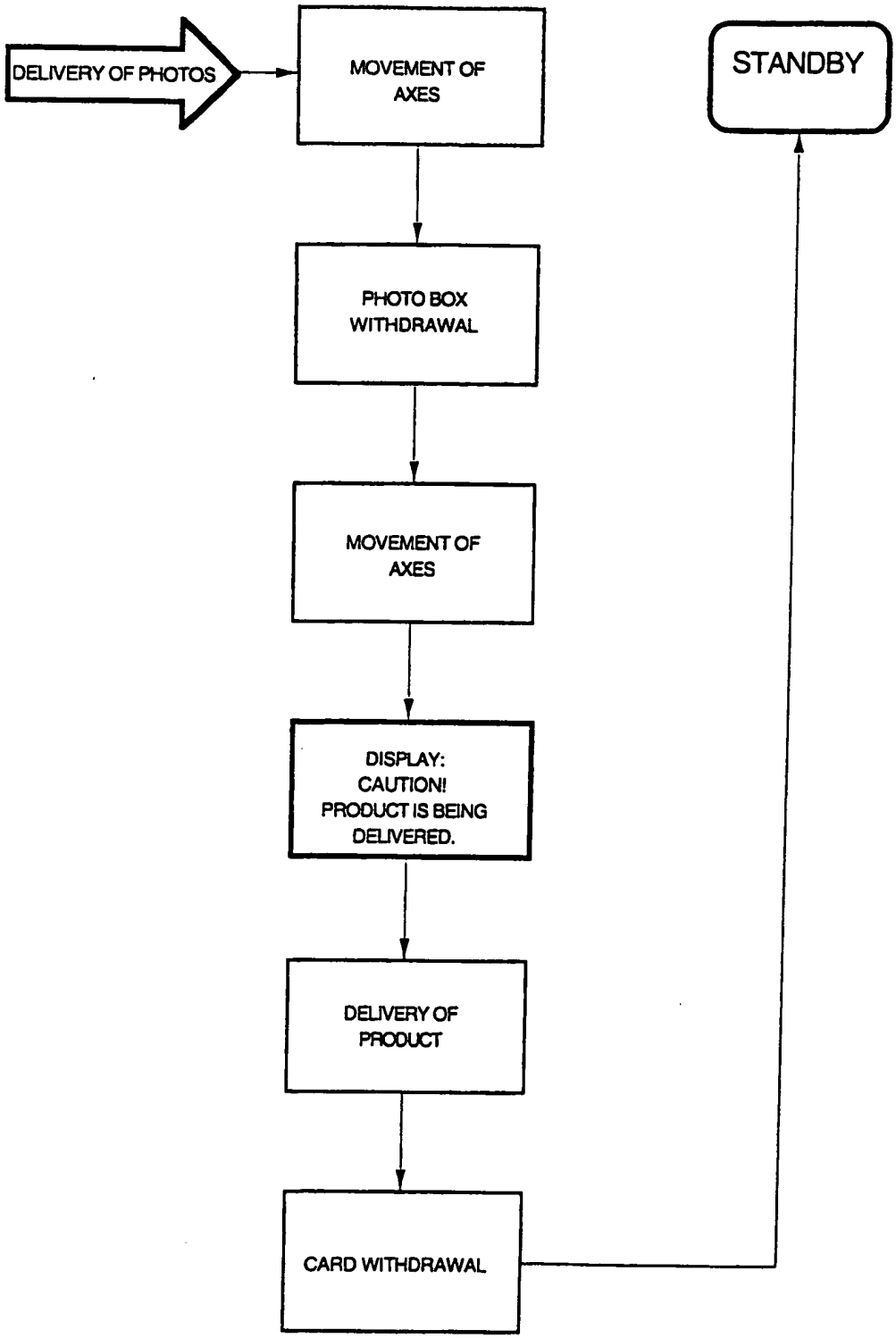
DELIVERY OF PHOTOS
MOVEMENT OF AXES
PHOTO BOX WITHDRAWAL
MOVEMENT OF AXES
DISPLAY: CAUTION! PRODUCT IS BEING DELIVERED.
DELIVERY OF PRODUCT
CARD WITHDRAWAL
STANDBY

Fig. 4

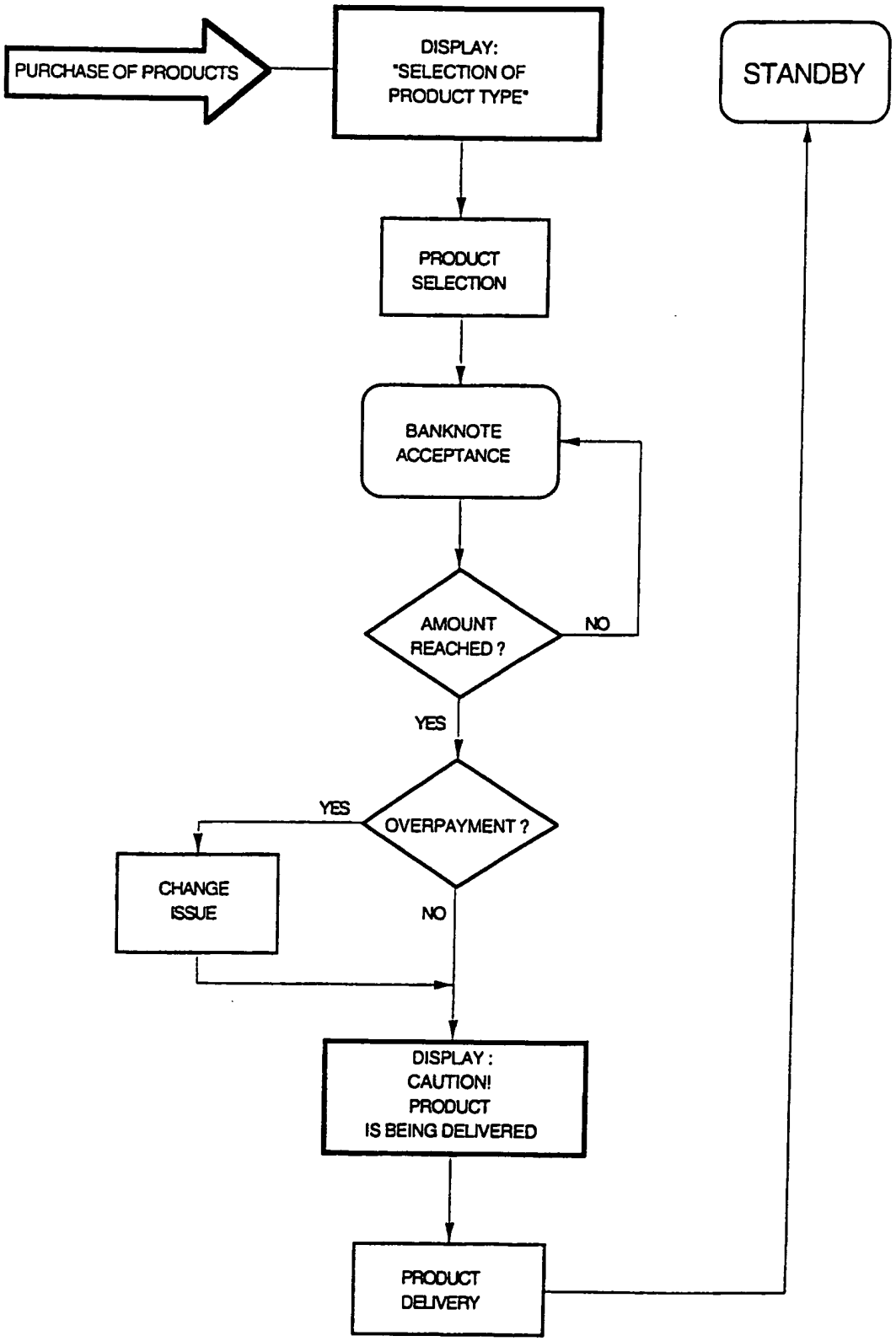
PURCHASE OF PRODUCTS
DISPLAY: "SELECTION OF PRODUCT TYPE"
STANDBY
PRODUCT SELECTION
BANKNOTE ACCEPTANCE
AMOUNT REACHED ?
NO
YES
YES
OVERPAYMENT ?
CHANGE ISSUE
NO
DISPLAY : CAUTION! PRODUCT IS BEING DELIVERED
PRODUCT DELIVERY

Fig. 5

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/IT 00/00278

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G03D15/00 G07F11/62

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G03D G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 86 02758 A (NYEGAARD KIM D;NYEGAARD IB) 9 May 1986 (1986-05-09) claim 1; figures 1,2	1-10
A	US 5 664 253 A (MEYERS MARK MARSHALL) 2 September 1997 (1997-09-02) abstract; figure 1	1-10
A	EP 0 769 720 A (DIRECT) 23 April 1997 (1997-04-23) abstract; claim 1; figures 1,2	1
A	FR 2 724 739 A (KIS) 22 March 1996 (1996-03-22) claim 1; figure 1	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 September 2000	15/09/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Romeo, V

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte onal Application No
PCT/IT 00/00278

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 8602758 A	09-05-1986	EP 0197927 A	22-10-1986
US 5664253 A	02-09-1997	FR 2738647 A GB 2305259 A,B JP 9127673 A	14-03-1997 02-04-1997 16-05-1997
EP 0769720 A	23-04-1997	WO 9714994 A	24-04-1997
FR 2724739 A	22-03-1996	NONE	